1. Introduction

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Archaeology is, in its most basic sense, a discipline founded on hypotheses. Our interpretations often present hypothetical explanations of the material record that are established through our understanding and synthesis of the data available to us. Archaeology is also unique in that it can be classified as both a science and humanity. An appreciation of human nature is essential, but there is also a reliance on scientific analysis of the raw data extracted from the material record in order to comprehend the past. However, empirical testing and theoretical insights cannot always provide access to the reasoning behind the actions of people. Indeed, our interpretive potential is often complicated further given the apparent duality of our field of study and the somewhat conflicting nature of the arts and the sciences (Jones 2002). This has resulted in multiple debates throughout the years concerning how archaeology *should* be practiced, as well as providing some confusion as to what archaeology actually consists of (Millson 2011a).

Experimentation in archaeology can be seen to bridge the gap between these two opposing philosophies by not only providing the means to 'get inside the minds' of past populations, but also the ability to test the processes of data acquisition, as well as the conclusions and hypotheses that are formulated from such data. In addition, at its core, experimental archaeology enables us to interpret the material record in a *realistic* manner.

Combining Practical and Philosophical Methods in the Pursuit of Past Culture

It is for this reason that the Experimentation in Archaeology session was organised for the 31st Theoretical Archaeology Group (TAG) conference, which took place in Durham, 2009. This session aimed to explore the application of experimentation with respect to archaeological theory, and how this allows us to both test our theoretical interpretations and formulate new ideas for future research. Building on the success of

the discussion that took place at the previous TAG conference in Southampton (see Millson 2011a and papers therein), the speakers aimed to demonstrate how new methodologies can be established and strengthened, and how experiment can (to some extent) allow the lives of past peoples to be experienced and understood. Centring on the debate between processual and post-processual theorists that has resulted in extended discourse over the past two decades as to the validity of an experimental approach, the overarching outcome was the argument for archaeologists to move beyond this stalemate in order to produce more integrated methodologies. It was suggested that a cyclical approach is now preferred, where theories can be tested and new hypotheses can be formed through the use of experimental archaeology.

A conclusion such as this is of no great surprise, considering that the current theoretical climate appears to be in a state of fragmentation. Indeed, the theme of the 31st TAG conference's plenary session discussed the prospect of the death of archaeological theory, in much the same manner as Bintliff and Pearce (2011) have recently expounded upon. With grand theoretical paradigms increasingly deemed useless and inflexible (Pearce 2011), and the increased presence of smaller theoretical ideas that are selected on an *ad hoc* basis, there has been a recent call for a more eclectic and reflexive approach to our interpretations of the archaeological record (Bintliff 2011). It is within that reflexive approach that experimental archaeology will be of increasing use, allowing archaeologists to formulate and test varied methodologies and theories and, thus, advance how we can think about the past in new and innovative ways.

The Utility of Demonstrations at Archaeological Conferences

The Experimentation in Archaeology session was also unique in that it combined the presentation of scholarly papers devoted to the amalgamation of theory and experiment with physical demonstrations that allowed those in attendance to engage with the experimental methods that were discussed.

The concept of enabling a wider audience to engage with experimental archaeology has been documented throughout archaeology's recent past. There are a variety of established locales that allow the public to experience experimental constructions of past practices, perhaps most notably Butser Ancient Farm in the United Kingdom and Lejre in Denmark (Hurcombe 2005; Stone & Planel 1999a).

While it is arguably not possible to entirely reconstruct the technologies and social practices of the past (Dobres 2000, 150; Stone & Planel 1999b), these have permitted people to understand to a certain extent what the lives of prehistoric people may have been like.

For archaeologists, experimentation has been a longstanding companion to our interpretation of the past since the stone working experiments of Lubbock, Nilsson and Evans (Coles 1973, 14). Its use has become more common since the New Archaeology's concentration on scientific techniques (Trigger 2006), and is understood to be of great value to our comprehension of the material record (e.g. Saraydar & Shimada 1973). However, at times the methodological descriptions of archaeological experiments can appear dry and highly clinical, resulting in a focus on the results of experimentation, rather than the experiment itself. It is often the case that the accounts of methods used, controls implicated, and statistic techniques applied can be passed over quickly in favour of the conclusions and interpretations that these experiment produced.

The same can be said of those papers given at archaeological conferences. With limited time available to the speaker, a conscious decision must be made concerning what aspects of the experiment will be discussed. This often leads to the results being furnished in detail, while the methods used are only just brought to light. It is often difficult for the audience to gain an understanding of the experiment's complexities, the way it was conducted and the choice of processes used, if the experimental methodology cannot be discussed in great detail. Of course, such conferences often provide time for the subject matter to be queried, but again this time is limited.

To reveal these experimental methodologies, audiences must be able to engage with them so that their procedures can be fathomed. Therefore, a series of experimental demonstrations were organised to provide delegates with the opportunity to experience the techniques used in a 'hands-on' fashion. Though the session, which focused on the scientific aspect of experimentation and its interpretive value for both testing and formulating theoretical ideas, was specifically removed from the *experiential* aspect of such experiments, these demonstrations allowed those archaeologists attending to participate in and gain a deeper understanding of some of the techniques that had been described. They also illustrate how much we can learn from actually *doing* something, rather than just reading about it. In this way, the experience involved is not the attempt to experience past lives through the

experiment, which is foiled by the fact that our modern interpretations will always bias our understanding of the event in question (Millson 2011b), but to perceive the subtleties of how the experiment was conducted.

Figure 1.1. Demonstration of Neolithic brewing presented at the Eindhoven Open Air Archaeology Park in 2009 (photograph courtesy of Merryn Dineley).

Following invitations to present at these proceedings, demonstrations were presented by Tania Morgan Alacantarilla, Natalie Uomini and Richard Hoyle, who demonstrated techniques used in the experimental analysis of ochre use in Palaeolithic hand stencils, and Merryn Dineley, who explored the possibility of brewing using Late Neolithic Grooved Ware (see Dineley 2011), proposing a similar demonstration to that conducted at Eindhoven Open Air Archaeology Park in 2009 (Figure 1.1). The session itself was split into two halves, with the demonstrations placed between them to break up the morning and afternoon proceedings. Although a combination of both demonstrations and papers that occurred simultaneously would have provided an even more engaging endeavour, the fact that there was both limited time and space, coupled with the needs of the experiments for materials that can be considered hazardous, meant that this was not possible.

These demonstrations presented two different approaches that can be used to illustrate experimental archaeology. Dineley revealed how malt cakes could be dissolved in water as part of the fermentation process of beer, showing how the ingredients could be stored for extended periods in their solid state prior to their use. While not expressly invited to take part in the experimental process, the audience was able to touch, smell and even taste the cakes and their products, providing a sensory experience that could not be achieved through an oral presentation. Although several of the session presenters had brought examples of materials they had produced, for example Sally Herriett's rawhide (Chapter 3) and Frances Liardet's glass vessels (Chapter 4), this demonstration allowed the processes through which the products were formed to be seen first hand. In addition, the demonstration itself was conducted in such a way that each process used was intimately described, with questions answered through examples of the experimental techniques used.

On the other hand, Alacantarilla *et al.*'s demonstration allowed the direct engagement of the audience with the experiment in a hands-on manner. Displaying

how early humans may have blown ochre to create negative handprints similar to those seen in various Upper Palaeolithic caves (Snow 2006), they actively encouraged observers to participate in the techniques used. The demonstrators showed participants how to mix ochre with water and the method for spraying the resultant coloured liquid to create an image. This not only illustrated the experiment that had been conducted, but allowed onlookers to engage with the methods used and understand them in much greater depth. The result was a collection of hand stencils produced by the demonstrators and those delegates who visited the exhibition, which is to be displayed within the Department of Archaeology at Durham (Figure 1.2).

Figure 1.2. Examples of the negative handprints produced by participants in the experimental cave painting demonstration at TAG 2009. Ochre of various colours was blown over the hand in order to produce the negative image.

Overall, the demonstrations at the 31st Annual Theoretical Archaeology Group conference were considered to be a great success that displayed the value of allowing attendees to engage with experimental archaeology beyond the papers that were presented. Through them the subtleties of the techniques used were revealed, allowing for a greater understanding of how the experiments discussed were conducted. Of course, regulations and other requirements had to be met, but careful planning and consideration of all eventualities can overcome these difficulties. Demonstrations have been seen at other conferences, especially the annual Experimental Archaeology conference, and are considered to be of great benefit when used in conjunction with presented papers concerning experimental techniques. The use of this method to convey experimental methodologies is yet to be explored to its fullest potential and it is hoped that such practices will continue at further conferences in the future.

Contributions to this Volume

The short collection of papers presented in this volume aims to bring some of the new ideas and interpretations discussed within the Experimentation in Archaeology session to the wider archaeological audience. Showing how techniques from varied schools of thought can be combined, it is hoped that they will set a new precedent for the role of experimentation in the future of archaeology.

In the first of these papers, Clarke and Renwick present the possibilities of using a phenomenological methodology to "experience" the site and area around the Bronze Age temple at Stanydale. Using this approach they show how it can increase our archaeological understanding of such places through the retention and cross-referencing of the experiences of individuals in order to identify probable subsidiary monuments within the landscape. Such a methodology is suggested to enable sites like Stanydale to be placed within their wider landscape context and to produce a greater picture of they may have related to overlooked features that surrounded them.

Herriet then details her experiments into the production of rawhide, with the aim of providing further insights into its production and use. Describing two different methods for the creation of this organic material, she expands upon its versatility, ability to withstand wear, and the amount of protection that it is able to afford, using the outcomes to test previous statements made regarding rawhide manufacture. The results of these experiments show that, with subtle changes to the way that hide is processed, two very different materials can be produced.

Following this, Liardet examines the technique of moulding glass around a clay core in the manufacture of Eastern Mediterranean alabastra and the social processes involved in teaching and learning this mode of production. Describing a framework of skill development, her experiments show how the physical gestures involved in craft activities have an ingrained value, which can be explored through the combination of typological studies and the understanding of the tools and materials involved in the making of the artefact itself. Overall, she states, the sociality of making should be an intrinsic part of our archaeological enquiries, due to the notion that the actions used in productions cannot be seen as exclusive to such tasks but rather are involved in a multitude of commonplace activities, despite our lack of palpable evidence for them.

Continuing with a theme of manufacture, Oliveras discusses the *Cella Vinaria* Archaeological Park and the recreation of a pair of Roman lever presses used to produce wine. In this highly detailed review, the classical description of these presses, originally written by Cato in *De Agricultura, XVIII*, is tested and Oliveras relates the various differences between this account and the experimental versions that were constructed in order to create functional machines. In addition, he elaborates on the future prospects of this 'experimental laboratory', including planned cultivation of grapevines and testing the various techniques involved in growing, harvesting and processing these as evidenced in the classical literature.

Finally, Foulds studies the assertion that the individual should be the base unit of analysis in any examination of the archaeological record. Focusing on the Lower Palaeolithic, he questions whether we can truly understand archaeology at this level, and explores the possibilities of tracing idiosyncratic action in respect to our early European ancestors; namely *Homo heidelbergensis*. Through studying the three-dimensional morphology of replica Acheulian handaxes and searching for possible idiosyncratic indicators, its is shown that any individual element is masked by other sources of variability, which are for the most part linked to differences in tool shape and the nature of the raw materials selected for manufacture. As a result, he argues that the study of the individual is currently an unobtainable goal beyond mere theoretical musings that remain untestable and that we should aim to move beyond a 'way of thinking' to a 'way of doing' in order to better understand this period of deep prehistory.

These contributions reflect the continued diversity of work that experimental archaeology is able to produce. Moreover, they show how experimentation can be integrated with theory to substantiate a variety of hypotheses, whether validating information gathered from classical sources or testing the inferences of more recent theoretical ideology. Despite its relationship to science based interpretations of the past, which have received their fair share of criticism in recent decades, experimentation should now be viewed as a method of interlinking objective and humanistic approaches to understanding the material record by allowing researchers to explore the myriad hypotheses that are continually developed and expanded upon during the practising of the archaeological discipline.

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